

LIQUID-CRYSTAL-BASED VIDEO PROJECTION SYSTEM HAVING ENHANCED PERFORMANCE AND RELIABILITY

ABSTRACT OF THE DISCLOSURE

A projector (12N) of this invention employs a 380 mm diagonal, amorphous silicon LCD (80) for receiving light rays from a light source (70), which achieves a small source size by employing four lamps (160) with small arc gaps (166) and a "pinwheel" mirror (164) that overlaps light rays from each of the arc lamps into a single collimated light bundle. The small source size produces a small cone angle (130) of light through the LCD. A lens (78) directs the narrow cone of light through the LCD at an optimal angle for achieving a 1,500:1 contrast ratio. Only a 4X magnification ratio is required to achieve a 170 cm (67 inch) diagonal projected image, which ratio enables projecting SXGA or greater resolution images with a five element projection lens (86). The LCD achieves an operational life of at least 50,000 hours before projected images display color degradation.

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